

Appl. No.: 09/718,528

Amdt. dated: December 22, 2003

Reply to Office action of: September 24, 2003

### **REMARKS / ARGUMENTS**

In the office action dated September 24, 2003, claims 8 and 11-13 were objected to due to minor typographical errors. The following amendments are made to satisfy this objection:

In line 4 of Claim 8, "direction;" has been changed to "direction.";

In line 6 of claim 13 "curvature;" has been changed to "curvature."; and

the dependency of Claims 11, 12 and 13 has been changed to depend from claim 10 rather than claim 5.

Claims 1-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Noh (U.S. 5,946,420) in view of Ancin et al. (U.S. 6,227,725). However, this rejection does not present a prima facie case of non-obviousness as this combination of references does not disclose all the elements of embodiments of the present invention as claimed in independent claims 1, 10, 14, 15, 16, 18 and 21 or the other claims dependent thereon. Noh discloses a text detection method wherein a convolution function is used to identify "upward peaks" and "downward troughs." When scanning from left to right, a peak occurs at the left edge of a text element, where the underlying data are going from white to black. A trough occurs where the underlying data are going from black to white. (Noh, column 3, lines 15-20). Noh defines both "peaks" and "troughs" as text edges. The area between the peak and the trough is the interior of the text character (Noh, col. 3, line 23). Accordingly, the peaks and troughs defined in Noh should not be confused with the "valleys" and "ridges" defined in the present application. The valleys and ridges described in the present application correspond to the approximate centerline of a character stroke when the stroke has a rounded cross-section and correspond to somewhat parallel lines or curves on either side of the centerline of the stroke when the stroke has a central plateau-like cross-section. These single or double axes are centered approximately midway

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between the text edges of the character stroke. These valleys and ridges are determined by measuring the curvature of the intensity gradient and determining when the curvature reaches a maximum or minimum absolute value (application, page 6, lines 13-17) as well as other criteria. Accordingly, the valleys, ridges and axes of embodiments of the present invention as claimed in all present claims in the application correspond to geometric features at the interior of the text character and away from the text edges. Therefore, the peaks and troughs identified in Noh equate to text edges and are not the same as the ridges and valleys of the present invention. The Examiner states that Ancin (U.S. 6,227,725) discloses identifying an intensity gradient direction at Figure 2; Column 2, Lines 57-64; Column 4, Lines 19-66. However, Ancin does not disclose identifying an intensity gradient *direction*. Ancin discloses identification of an intensity gradient *magnitude*. Ancin teaches that the intensity gradient magnitude must be less than a threshold value in order for a pixel to qualify as a text edge (Col. 5, line 3). Ancin does not teach the identification or use of an intensity gradient *direction*, nor does Ancin teach the use of any intensity gradient characteristics for identification of a stroke axis, which is not a text edge. Claim 1 and claims 2-9, which depend thereon all contain the elements of identifying an intensity gradient direction and identifying a stroke axis, which are not found in Noh, Ancin or combinations thereof.

The examiner further rejects claims 4 - 7 as obvious over the teachings of Noh as found in Figures 3-5; Col. 8, Lines 17-56; Col. 11, Lines 27-55. This rejection is in relation to the transverse directional search element and measurements related to a stroke axis identified in these claims. However, applicant can find no reference to this element at the indicated location in the prior art reference. Applicant reiterates that the stroke axis described in the present application (as explained above) is not identified in Noh or Ancin and, therefore, no measurements related to the axis can be taught. The Examiner identifies element 124 in Figures 1-3 of Noh as a stroke axis, however, this element, as shown in Noh, refers to a point on an intensity profile near "where there is alignment with an edge." No reference in Noh equates this element with a stroke axis as described in the present application.

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Claim 10 and claims 11-13, which depend thereon also contain the elements of identifying axes and measuring the proximity of said axes to said edge component. These elements are not found in Noh, Ancin or combinations thereof.

Claim 14 also contains the elements of identifying an axis and measuring the proximity of said axis to said edge image component. These elements are not found in Noh, Ancin or combinations thereof as explained above.

Claim 15 also contains the elements of identifying an axis including specific gradient curvature criteria and measuring the proximity of an axis to an edge pixel. These elements are not found in Noh, Ancin or combinations thereof as explained above.

Claim 16 and claim 17, which depends thereon, contain the elements of measuring gradient curvature features and measuring the proximity of these features to edge components. These elements are not found in Noh, Ancin or combinations thereof as explained above.

Claim 18 and claims 19-20, which depend thereon also contain the elements of identifying an intensity curvature feature and measuring the proximity of said feature to said edge. These elements are not found in Noh, Ancin or combinations thereof as explained above.

Claim 21 contains the elements of identifying an axis and measuring the spatial relationship between the axis and an edge. These elements are not found in Noh, Ancin or combinations thereof as explained above.

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The applicant respectfully requests that a timely Notice of Allowance be issued in this case. If the Examiner believes that for any reason direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,  
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